

REMARKS

I. Status of the claims

Upon entry of this amendment, claims 1-10 are pending.

Claim 1 has been amended to delete the parentheses at the end of the claim, in order to more clearly state what the Applicant regards as the invention. No new matter is added by this amendment.

II. Claim rejection under 35 U.S.C. § 112, second paragraph (indefiniteness)

Claims 1-10 are rejected as allegedly indefinite because the language at the end of claim 1 ("In the general formula (I), wherein R1 and R2 each independently represents a straight chain alkylene group wherein the number of carbon atoms in the group is an even number, the sum of the number of carbon atoms in R1 and R2 is 12 or more, and n represents a number of 3 to 40.") is in parentheses and as a result the Examiner is unclear as to whether this language constitutes an optional limitation.

In response, the parentheses have been removed from around the claim limitation in question, and this rejection should thus be withdrawn.

III. Claim rejection under 35 U.S.C. § 103(a) (obviousness)

Claims 1-3 and 6-10 are rejected as allegedly obvious over Li et al. (U.S. patent 6,221,978; "Li") in view of Takahashi et al. (JP 5-51573; "Takahashi") when taken with DYNACOLL® polyester data from Degussa®.

According to the Examiner, Li teaches a moisture curable, hot melt, polyurethane adhesive formed by a reaction between polyisocyanate and polyols. The Examiner asserts that Li teaches aromatic/aliphatic polyester polyols, an aliphatic polyether polyol having a molecular weight between 1000 and 4000, and an amorphous aromatic polyester polyol with the trade name DYNACOLL 7100® having a glass transition temperature above 0°C.

The Examiner acknowledges that Li does not teach the claimed molecular weights or glass transition temperatures of the aromatic polyester polyols, but relies on the data provided in the Degussa® reference for the DYNACOLL 7100® series for these limitations.

The Examiner also acknowledges that Li does not teach the claimed long-chain polyester polyol, but relies on Takahashi to cure this deficiency. According to the Examiner, Takahashi teaches moisture curable, hot melt, polyurethane adhesives comprising crystalline aliphatic polyester diol, prepared by reacting sebacic acid and 1,6-hexanediol, and an aromatic polyester diol, the aliphatic polyester diol having a molecular weight of 500 to 5000.

According to the Examiner, one of ordinary skill in the art at the relevant time (i.e., at the time of filing the instant application) would have found it obvious to replace the aromatic/aliphatic polyester diol of Li with the crystalline aliphatic polyester of Takahashi in order to improve the adhesion of the adhesive, and reach the claimed invention. The Applicants respectfully traverse, on the grounds that Takahashi teaches away from the claimed invention, and one of ordinary skill in the art at the relevant time would thus not be motivated to seek guidance from Takahashi to arrive at the claimed invention.

The instant specification teaches that one problem with conventional prior art adhesives is that the initial adhesive strength is too high and this prevents peeling of the sheet from the substrate even after only a small amount of time (*e.g.*, only three minutes) has lapsed after pasting – thus, if the sheet is improperly pasted to the substrate, it cannot be peeled off of the substrate to correct the problem, because the initial adhesive strength is too high. In addition, when one attempts to peel the sheet off of the substrate after it has been pasted on using a prior art adhesive, the substrate becomes damaged and can no longer be recycled for further use. (*See* paragraph [0013] at p. 2 of the specification as published.). Indeed, it is the stated goal of the instantly claimed invention to avoid these problems associated with conventional prior art adhesives, by providing an adhesive with an initial adhesive strength that is sufficiently low to allow peeling pasting without damaging the substrate, but with a very high final adhesive strength to prevent such peeling when the manufacturing of the product is complete. (*See* paragraph [0015] at p. 2 of the specification as

published.). Moreover, the instant specification actually cautions against the use of an adhesive with an initial adhesive strength that is too high, stating that “if the initial adhesive strength was increased, rather than peeling of the sheet and the like being prevented at the complex positions of the substrate, coating work ability deteriorated due to increased melt viscosity in the adhesive.” (See paragraph [0016] at p. 2 of the specification as published.). Thus, the instantly claimed invention solves the problems encountered when using conventional prior art adhesives. (See also paragraph [0152] at p. 14 of the specification as published (“The present invention provides a moisture-curable polyurethane hot-melt adhesive which shows excellent final adhesive strength and causes no peeling of a sheet or film from a substrate having complex portions when the sheet or a film is pasted to the substrate with the adhesive. Furthermore, it is possible to remove the sheet or the like from the substrate easily when peeling is conducted within a predetermined time, and therefore the substrate can be recycled.”)).

Takahashi teaches one such conventional adhesive that has an initial adhesive strength that is so high that it results in the aforementioned problems. Indeed, the stated goal of the Takahashi adhesive is to “prepare a moisture-curable hot-melt urethane adhesive excellent in initial adhesion.” (See Takahashi, Abstract, under heading “Purpose.”). And, in fact, the Takahashi adhesive allegedly accomplishes this goal. (See Takahashi, Abstract, last line under heading “Constitution.”). Indeed, the entirety of the Takahashi reference points to the stated goal of providing an adhesive with high initial strength. For example, see Takahashi at paragraph [0005] (“the present inventors ... found that ... a hot melt adhesive with a good initial adhesive strength can be obtained, thereby completing the present invention.”); and paragraph [0029] (defining “initial adhesive strength”: “[i]n the present invention, an initial adhesive strength of an adhesive is the adhesive strength observed for a hot melt adhesive in a very short period early in a process of adhesive solidification soon after applying the melted hot melt adhesive to one of a binding pair and then sticking it to the other of the pair.”). Thus, Takahashi teaches away from the claimed invention, and in fact teaches the type of adhesive that causes the problems that instant inventors were trying to avoid when they conceived the instantly claimed invention. Accordingly, one of ordinary skill in the art at the relevant time, when seeking an adhesive with **low strength** initial adhesive

properties but high strength final adhesive properties, would not be motivated to employ the teachings of Takahashi to substitute the crystalline aliphatic polyester of Takahashi for the aromatic/aliphatic polyester diol of Li, with any expectation of success. Put another way, a person of ordinary skill in the art at the relevant time, when seeking an adhesive with **low strength initial adhesive properties**, would not look to Takahashi for guidance. Such an adhesive is not taught or suggested in Takahashi. Thus, the skilled artisan would not be motivated to combine the teachings of Takahashi with those of Li to arrive at the instantly claimed invention. Therefore, Takahashi cannot cure the deficiencies of the teachings of Li, and the instant claims are not obvious over Li in view of view of Takahashi when taken with DYNACOLL® polyester data from Degussa®.


Thus, claims 1-3 and 6-10 are not obvious over Li and Takahashi (when taken with DYNACOLL® polyester data from Degussa®), and this rejection should be withdrawn.

IV. Conclusion

This application is believed to be in condition for allowance, which is earnestly solicited. If the Examiner believes there are further issues that could be advance by an interview or entry of an Examiner's Amendment, the Examiner is invited to contact the undersigned attorney.

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Respectfully submitted,

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